

Abstract

The invention includes a device for measuring the velocity of a target that includes an array of vertical cavity surface emitting lasers having an energy output, a first lens configured to capture the energy output of the array and project it onto the target whose velocity is to be monitored, a second lens configured to capture the energy output reflected from the target, and at least one detector configured to detect the energy transmitted from the second lens, where the energy of the array projected onto the target creates pulses of light from reflectance off of surface imperfections on the target, and the velocity of the target is determined by monitoring the frequency of the pulses of light. The invention also includes a method of measuring the velocity of a target that includes projecting an image of at least one vertical cavity surface emitting laser array onto the target, monitoring the intensity pattern formed from the image reflecting off of the target with at least one light intensity detector to produce an analog signal, converting the analog signal to a digital signal having the same frequency, measuring the frequency of the digital signal with a counter, and processing the frequency with a microprocessor to determine the velocity of the target.